UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4
Water Protection Division
Clean Water Enforcement Branch

COMPLIANCE EVALUATION INSPECTION REPORT

Hattiesburg Wastewater Collection and Transmission System
City of Hattiesburg
Forrest County and Lamar County
Mississippi
NPDES Permit No. MS0020303 and MS0020826

Address:
900 James Street
Hattiesburg, MS 39401

Inspection Dates:
August 13 – August 16, 2012

Inspectors:
Dennis Sayre, Enforcement Inspector, EPA Region 4
Sara Schiff, Enforcement Inspector, EPA Region 4
Jamon Rucker, MDEQ-Office of Pollution Control

Inspection Report Prepared by:
Dennis Sayre

September 18, 2012

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

CMOM	Capacity, Management, Operation, and Maintenance
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EPA	United States Environmental Protection Agency
MDEQ	Mississippi Department of Environmental Quality
GIS	Geographic Information System
GPM	Gallons per Minute
I/I	Infiltration and Inflow
ICIS	Integrated Compliance Information System
NPDES	National Pollutant Discharge Elimination System
MGD	Million Gallons per Day
SSES	Sanitary Sewer Evaluation Study
SSO	Sanitary Sewer Overflow
WCTS	Wastewater Collection and Transmission System
WWTP	Wastewater Treatment Plant

I. OVERVIEW

The City of Hattiesburg, Mississippi's Water and Sewer Department (the Department) provides sanitary sewer and drinking water services for residential, commercial and industrial entities in and around the City of Hattiesburg (the City), Mississippi. Regarding the sanitary sewer services, the City's Water and Sewer Department is responsible for the operation and maintenance of two wastewater treatment lagoons, approximately 304 miles of sewer lines, 77 pump stations and other sewer related appurtenances serving approximately 62,860 customers.

On January 27, 2012 the Environmental Protection Agency sent a Information Request Letter (§308 Letter) pursuant to Section 308 of the Clean Water Act (CWA), requesting the City to provide information related to Sanitary Sewer Overflows (SSO) from the City's Wastewater Collection and Transmission System (WCTS). EPA received and evaluated the City's response, dated March 5 and April 10, 2012.

The EPA conducted a Compliance Evaluation Inspection (CEI) of the City's WCTS on August 13 and 14, 2012 and again on August 16, 2012. The portions of the inspection that occurred on August 13 and August 16 were independent site visits (EPA inspectors only) of select portions of the WCTS. The August 14 inspection consisted of City personnel, Mississippi Department of Environmental Quality (MDEQ) personnel and EPA inspectors for interviews and accompanied site visits.

The purpose of this CEI was to evaluate compliance with the CWA and the City's National Pollutant Discharge Elimination System (NPDES) permits as it relates to SSOs from the WCTS, and to assess the City's Capacity, Management, Operations and Maintenance (CMOM) programs. Additionally, the purpose of this compliance inspection was to examine the causes and potential corrective actions for SSOs from the WCTS and related pump stations. The EPA also conducted a Reconnaissance Inspection on the Hattiesburg South Sewage Treatment Lagoon to evaluate the overall condition of the facility and observe work being performed to add aeration equipment and remove sludge. The Lagoon will not be discussed in this report.

During the inspection on August 14, 2012 the EPA requested from City management written documentation of the CMOM programs, including inspection and maintenance records, interviewed management personnel and visited various sites in the WCTS with City personnel and a MDEQ inspector. Sites visited included the Cross Creek Pump Station (PS); the University of South Mississippi (USM) PS at US-49 and W. 4th Street; the Village PS; the E. Laurel PS; and manholes at N. 19th Avenue and Pearl Street. Sites visited by EPA inspectors on August 13th and 16th included manholes in the vicinities of: 1) Cypress Avenue and Duke Avenue and Edwards Street; 2) N. 19th Avenue and Pearl Street; 3) J.M. Tatum Industrial Blvd; and, 4) the vicinity of Turtle Creek Mall. This report describes the EPA's findings.

II. OBJECTIVES

The specific objectives of the inspection were to assess the City's compliance with the CWA and its NPDES permits and to assess the City's CMOM programs.

III. INVESTIGATION METHODS

The investigation included:

- Review of the Integrated Compliance Information System - NPDES (ICIS-NPDES) federal database, state documents and the NPDES Permits;
- Review of the City's response to EPA's §308 Letter;
- Review of the City's NPDES permits and related documents;
- Interviews with the City's Water and Sewer Department personnel; and,
- Visual inspection.

IV. REGULATORY SUMMARY

The MDEQ is authorized under the CWA to implement the NPDES program in Mississippi. The City owns and operates two sewage treatment lagoons and their associated WCTS. The South Lagoon is a 430 acre wastewater treatment lagoon classified as a major treatment plant, permitted to treat 20 Million Gallons per Day (MGD) of domestic and industrial wastewater and is authorized under Mississippi's NPDES Permit No. MS0020303 (the South Lagoon Permit). A municipal wastewater treatment plant permitted to treat 1 MGD or more of wastewater is classified as a major treatment plant. The South Lagoon Permit authorizes discharge of treated wastewater from the sewage treatment plant into the Leaf River in the Lower Leaf River Watershed. The North Lagoon is also a major treatment plant authorized under MDEQ's NPDES Permit No. MS0020826 (the North Lagoon Permit) to treat 4 MGD of domestic and industrial wastewater. The North Lagoon Permit authorizes discharge of treated wastewater from the North Lagoon to the Bowie River, a tributary of the Leaf River located in the Upper Leaf River Watershed.

The Leaf River is listed as impaired for pathogens, sediment, organic enrichment/low dissolved oxygen and nutrients from well north of the City of Hattiesburg to approximately 23 miles downstream to its confluence with Tallahala Creek. The Bowie River is impaired for pathogens, sediment, organic enrichment/low dissolved oxygen and nutrients from its confluence with Okatoma Creek to its confluence with the Leaf River just north of the City. MDEQ has developed a Total Maximum Daily Load (TMDL) for pathogens and a Phase I nutrient TMDL for both the Bowie and the Leaf Rivers to address these impairments. Phase I TMDLs are developed so that when more data are available and nutrient water quality standards are developed, Phase II TMDLs could address nitrogen and/or phosphorus loads as needed.

SSOs are prohibited discharges based on Sections 301 and 402 of the CWA which stipulate that, with few exceptions, the discharge of pollutants by any person is prohibited without a

permit. SSOs may be a contributing factor in the impairment of waters in the Leaf River Watershed. Also, Section IV.L of MDEQ's Regulation WPC-1 states that "the discharge of any wastewater from a facility operating under a State permit to waters of the State shall constitute a violation of the permit, except as provided in Section IV.A.20. and 27., or as authorized under separate permit pursuant to Section 402 of the Federal Act." SSOs that reach waters of the state constitute a violation of the NPDES permit.

V. INSPECTION SUMMARY AND FINDINGS

The EPA performed an on-site inspection of the WCTS and reviewed regulatory documents and historic records submitted by the City to MDEQ and the EPA. This section will provide a summary of both means of inspection as well as any recommendations to the City to improve the WCTSs' performance.

A. Management Interview

The EPA met with the City's Water and Sewer Department Director, the General Manager, the Water Plant Supervisor, the Wastewater Division Manager, the Sewer Department Supervisor and MDEQ's inspector at approximately 8:30 a.m., August 14, 2012. Topics of discussion included the use and documentation of any CMOM programs including Fats, Oil, and Grease (FOG) Control; root control; capacity assurance; preventive maintenance and inspections; emergency response; and pump station back-up power.

The EPA discussed concerns relating to SSOs in detail with the Director and inquired about each CMOM program mentioned above to determine whether a formal or non-formal (not in writing) program existed for use to manage various operations and maintenance needs of the WCTS. The Director indicated that no formal written program existed for any CMOM programs but discussed in detail the procedures used to respond to SSO reports received from the public or discovered internally.

The City primarily utilizes a system referred to as the "Action Center" to address citizen complaints. According to the City's website, the Action Center "is the information exchange center between city departments and local residents. When a citizen calls with a concern, an Action Center operator will log the request into a new citywide software system (EnerGOV) and the appropriate department will be notified to address the problem." The City becomes aware of SSOs typically from complaints received at the Action Center, from calls to the Water and Sewer Department Dispatcher(s), or from calls to the Wastewater Treatment Plant (WWTP) Operator after normal operating hours.

The Division Manager receives all of the complaints and is responsible for sending out response crews and assigning work orders. After normal hours of operation, the WWTP Operator is responsible for dispatching response crews to SSOs and other customer complaints. The City's Water and Sewer Department is approximately 95% manned to the level proposed by the Department and has at their disposal three 2-man pump truck crews

and two sewer maintenance crews. Major equipment on-hand includes two vac-trucks, three pump trucks, two CCTV trucks and a smoke test system.

The Department currently does not have a formal written sewer overflow response plan and currently maintains a basic trouble call database that has limited data tracking ability for SSO occurrences and maintenance actions.

B. Permit Review

Both the North and South Lagoons' NPDES Permits contain MDEQ's standard conditions for operating and maintaining publically owned treatment works (POTW). Of note, condition T-28 (Proper Operation, Maintenance and Replacement), specifically states that the "permittee shall at all times properly operate, maintain, and when necessary, promptly replace all facilities and systems of collection, treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit." The WCTS and the WWTPs make up the POTWs.

C. Site Inspection

On August 13, 2012, the EPA performed an independent site inspection on various manholes located throughout the City. EPA's inspection team visited manholes located in four separate sections of the City (referred to here as Areas 1 through 4); specifically, (Area 1) - Manholes on Cypress Avenue, Duke Avenue and Edwards Street located just west of the South Lagoon; (Area 2) - N 19th Avenue and Pearl Street located in the central section of the City; (Area 3) - J.M. Tatum Industrial Blvd located in the south side of the City; and, (Area 4) - In the vicinity of Turtle Creek Mall. Weather conditions on August 13, 2012 were dry, hot and humid.

Area 1 is an older section of town and consists mainly of low to lower middle income and minority residents. The EPA suspected that the City is experiencing SSOs in this area due to information gathered from the §308 Letter. Inspectors did not see any visible signs of SSOs in this area but noted a couple of manholes in the road ways that displayed sunken or indented asphalt (by one or two inches, extending out 18 inches or more) on one side of the manhole cover, which may be a sign of chronic surcharging in the manhole.

Area 2 is also an older section of the City that appeared to consist primarily of lower middle to middle income residents. The EPA suspected that the City is experiencing SSOs in this area due to information gathered from the §308 Letter. Inspectors did not note any visible signs of SSOs at any of the manhole covers, but noted a large hole in the lateral of a residence at 200 N. 19th Avenue that appeared to be caused by recent surcharging in the City's WCTS. Conversations with a local resident indicated that there is a back-flow preventer on the lateral that prevents sewage from entering the home and that the sewers overflow regularly in this area. Figures 1 through 4 display pictures of this area.

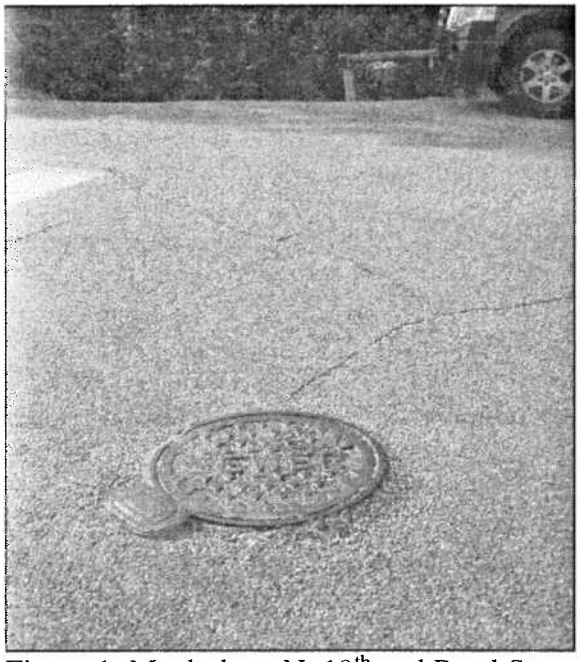


Figure 1. Manhole at N. 19th and Pearl St. (Area 2)

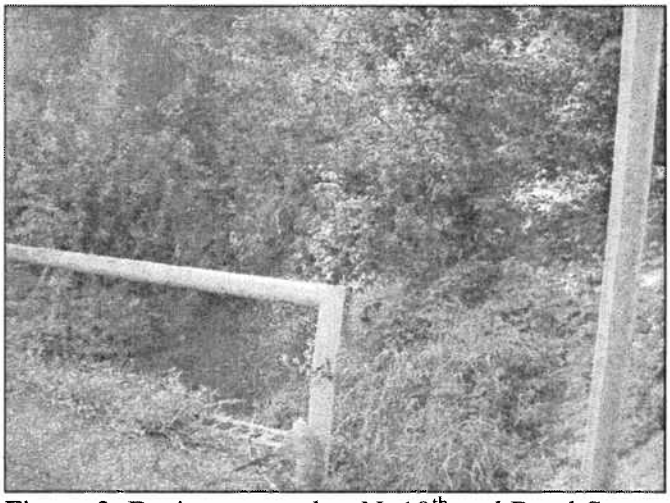


Figure 2. Drainage canal at N. 19th and Pearl St.

Figure 3. Manhole just south of at N. 19th and Pearl St.

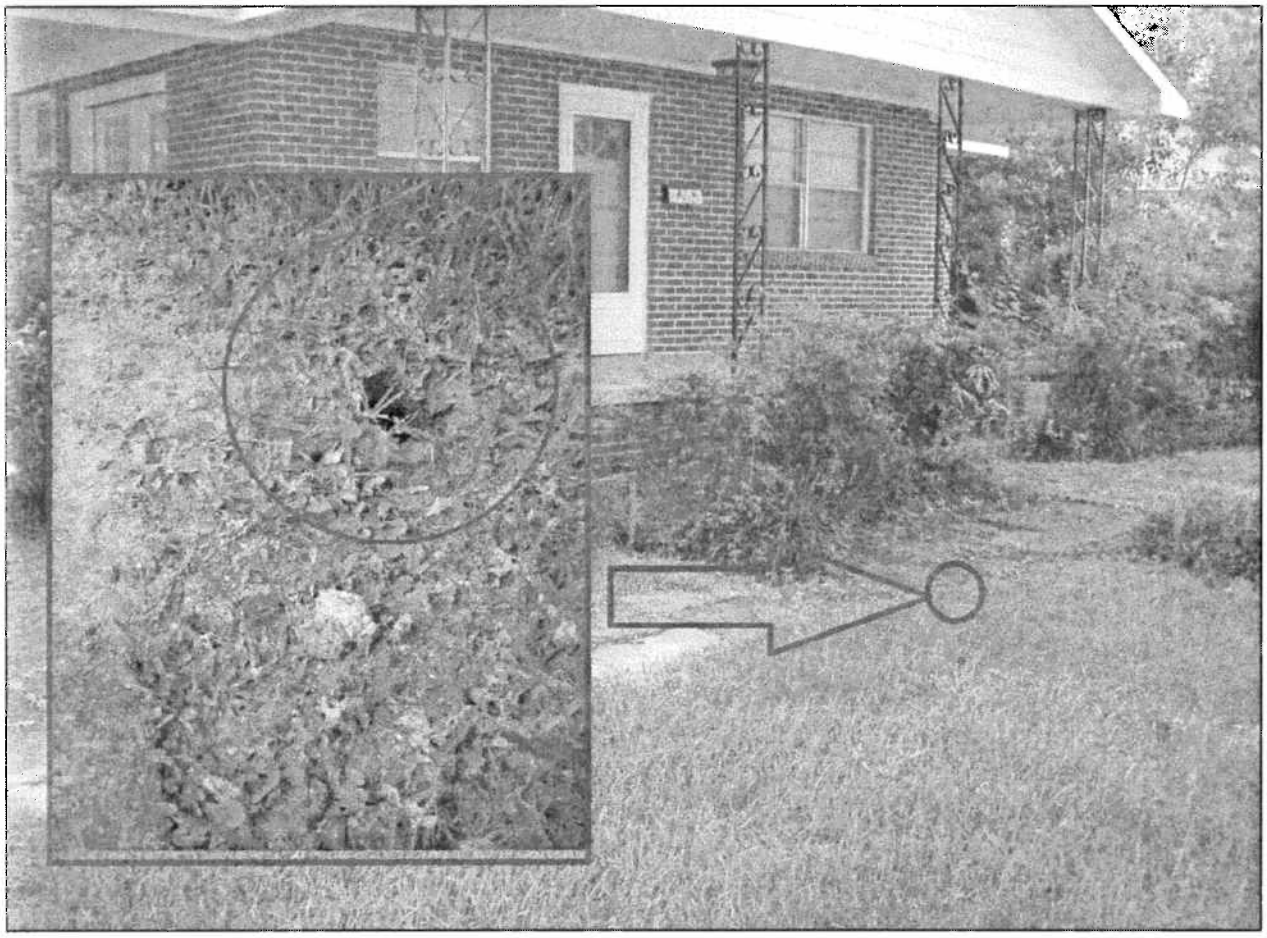


Figure 4. The arrow shows the location of a 3 to 4 inch diameter hole surrounded by sewage debris located in residential yard.

Inspectors did not note any signs of overflows in Area 3 or Area 4 but did note a broken manhole crown on Turtlecreek Drive next to Turtle Creek Mall.

On August 14th, the inspection team visited Areas 1, 2 and 4 with City personnel and the MDEQ inspector. The manhole cover in Figure 1 above was removed and inspected. The interior of the manhole displayed signs of chronic surcharging due to thick buildup of sewage debris on the top rung of the manhole ladder (see Figure 5). City personnel also removed the cover to the manhole with the broken grout around the crown located at Turtle Creek Mall; there were no signs of surcharging in this manhole. Damage to the exterior of the manhole crown appears to be caused by external conditions such as impact from a vehicle and appeared to have no effect on system performance. This manhole belongs to the mall, not the City.

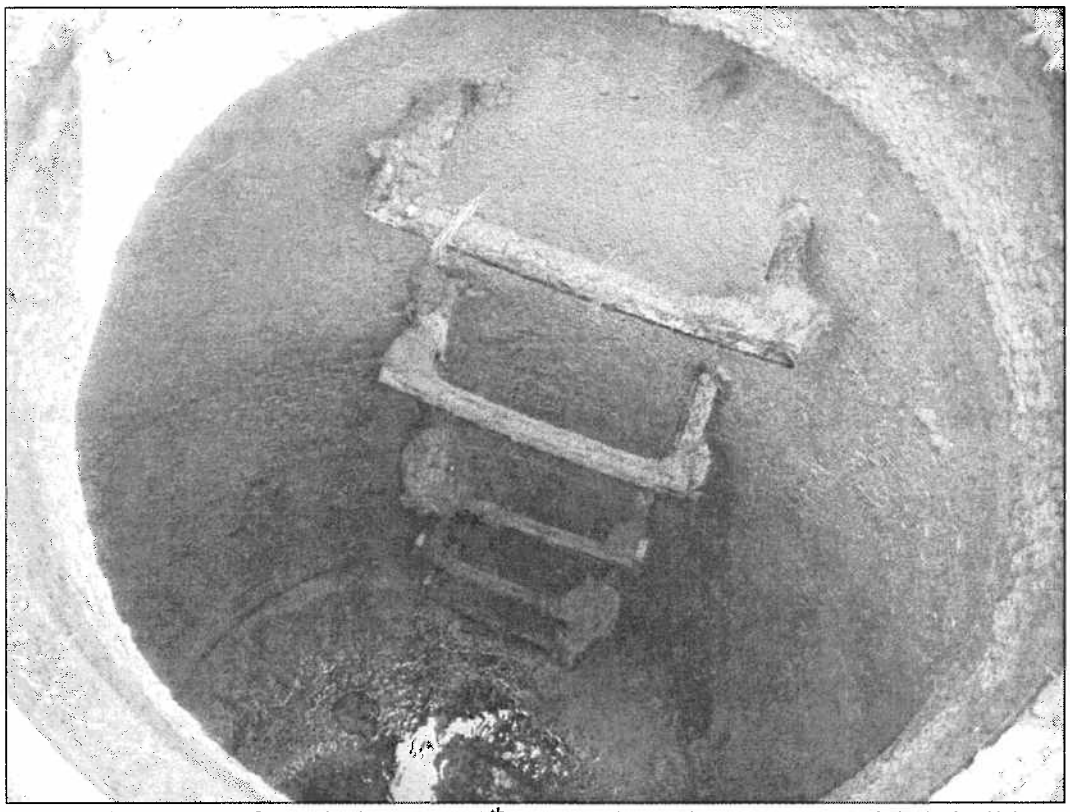


Figure 5. Interior of manhole at N. 19th Ave and Pearl Street. Note debris build-up on the top ladder rung as well as the lower elevated ladder rungs.

Inspectors also visited the Cross Creek Pump Station (PS); the USM PS at US-49 and W. 4th Street; the Village PS; the E. Laurel PS; manholes at N. 19th Avenue and Pearl Street; and manholes at Pearl Street. The Cross Creek PS appeared to be in good working order; the USM PS appeared to be working properly but inspectors noted a sewage smell emanating from the wet well area which may have indicated a maintenance deficiency such as excessive solids in the wet well. In addition, inspectors noted two recently replaced pumps in the USM PS. This PS is scheduled for rehabilitation in 2013. The 4th Street PS and E. Laurel PS appeared to be in adequate operating condition. The Village PS was experiencing a failed pump and had a portable pump on a trailer connected to the wet well as a temporary pump-around until the pump is replaced. City personnel stated that the pump is scheduled for replacement the following week due to a delay in parts delivery.

EPA inspectors were unexpectedly in the City on August 16, 2012. On the evening of August 16th, a fairly heavy, but not untypical rain event for this area occurred. The rain started at about 6:50 or 6:55 p.m. and the event's peak intensity started around 7:00 p.m. and ended within 30 minutes then dwindled to a light shower until approximately 8:45 p.m. EPA inspectors intended to revisit Area 2 (N. 19th and Pearl) to observe any possible SSOs. On the way to Area 2, the inspector who went out on reconnaissance (Dennis Sayre) observed an active SSO on Hardy Street at approximately 7:08 p.m. (see Figure 6 below).

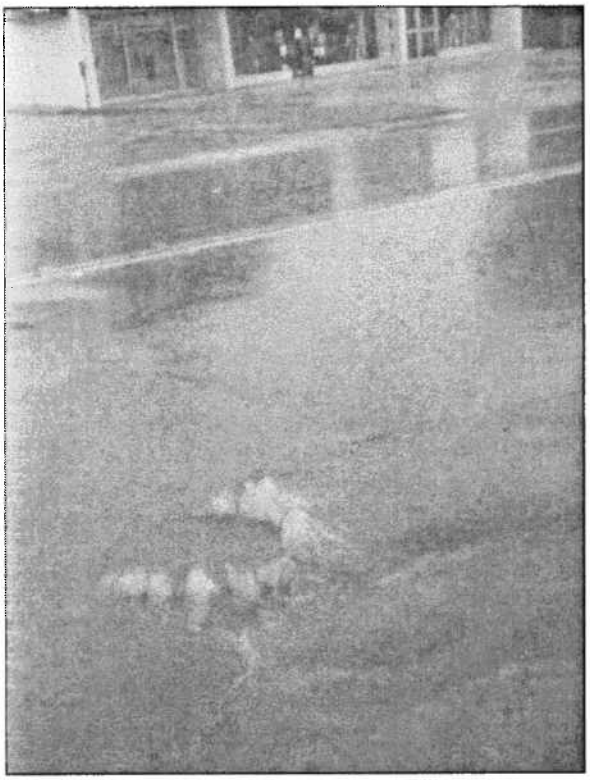


Figure 6. SSO on Hardy Street in front of the Sunflower Grocery Store. Note the indentation of the asphalt on one side of the manhole cover, indicative of chronic surcharging.

The EPA inspector called the WWTP Operator at 7:25 p.m. to report that an overflow was occurring at this location. City personnel arrived on scene at 7:31 p.m. and placed a large safety traffic cone on the manhole to prevent traffic hazards. The flow from this SSO was observed entering a stormwater culvert.

The EPA inspector then drove to the N. 19th and Pearl Street location and observed SSOs at that location and one block to the east at 105 Park Avenue (see Figures 7 through 11 below).

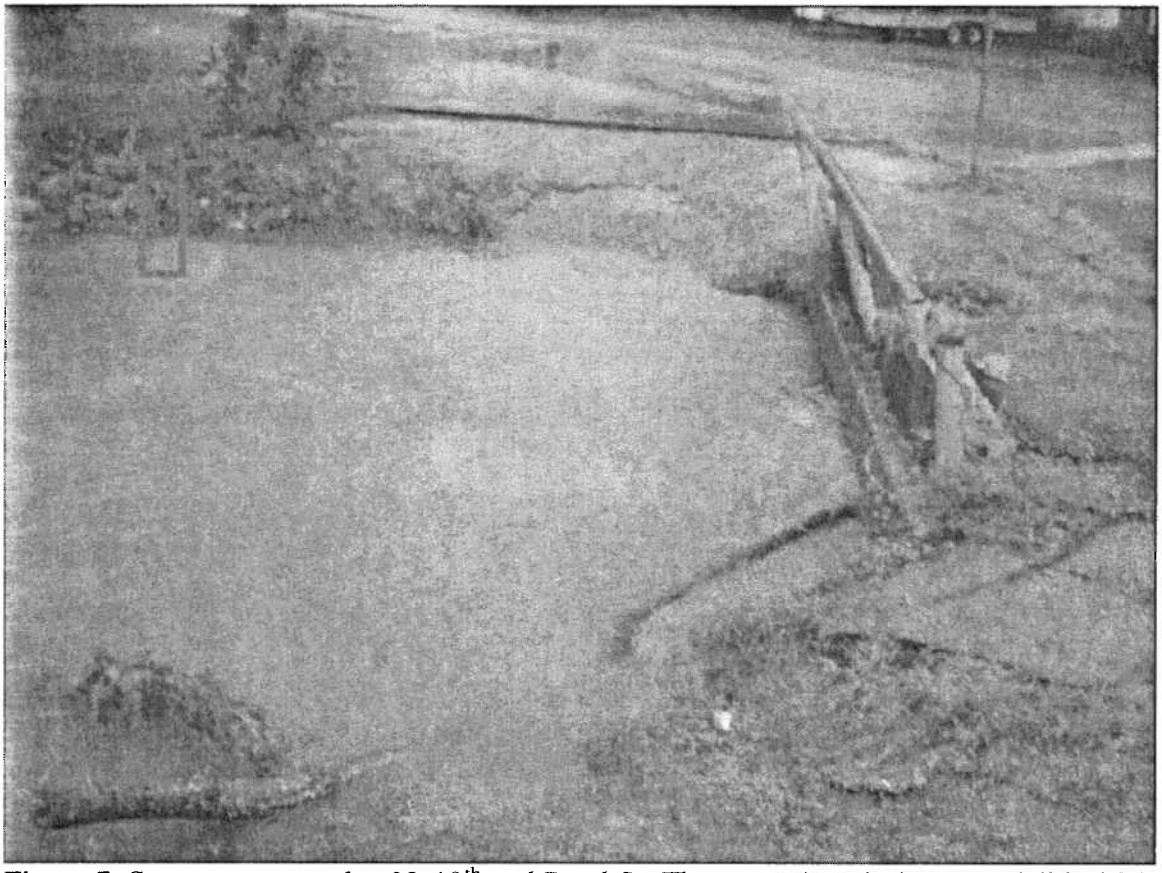


Figure 7. Stormwater canal at N. 19th and Pearl St. The arrow is pointing at a visible SSO emanating from a lateral within the City's right of way at 200 N. 19th Avenue in the resident's front yard (See Figure 8.)

Figure 8. SSO from lateral within the City's right of way at 200 N.19th Avenue.

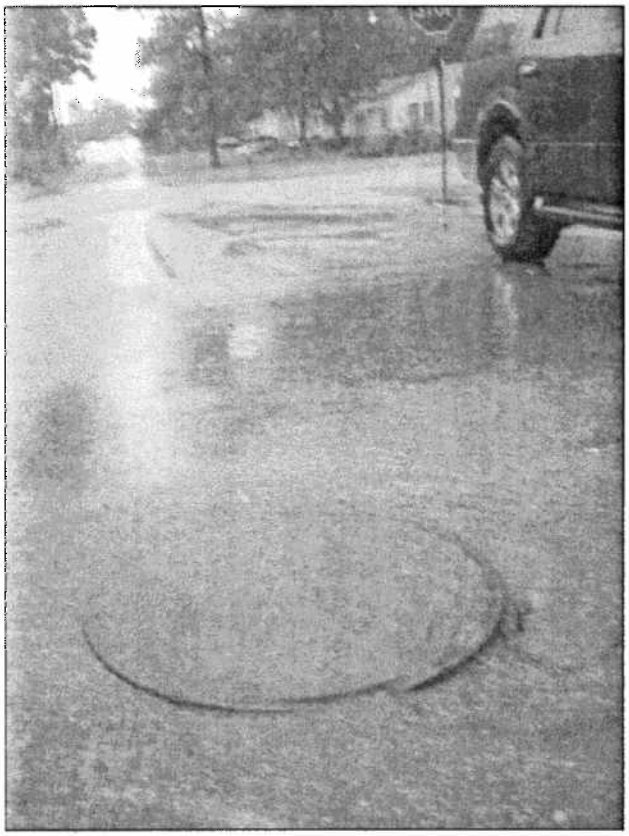
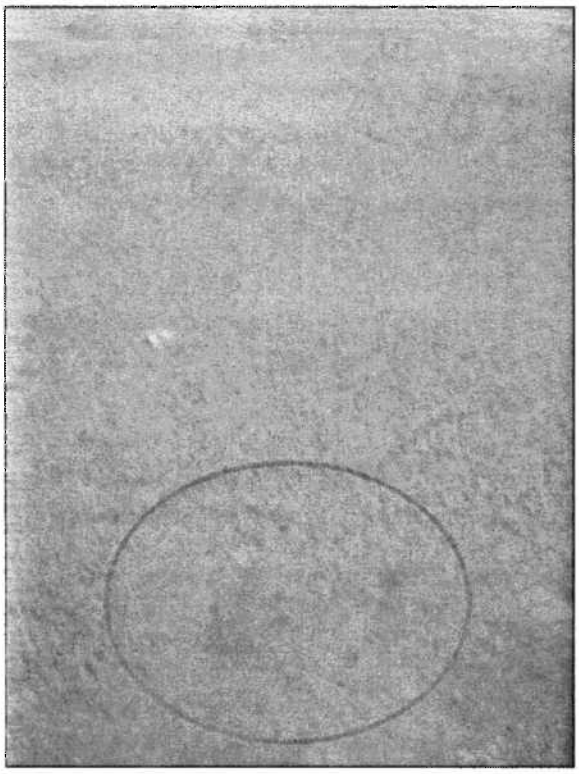


Figure 9. Manhole overflowing at 200 N. 19th Avenue.

Figure 10. SSO from private lateral at 200 N. 19th Ave. Same location as seen in Figure 4.



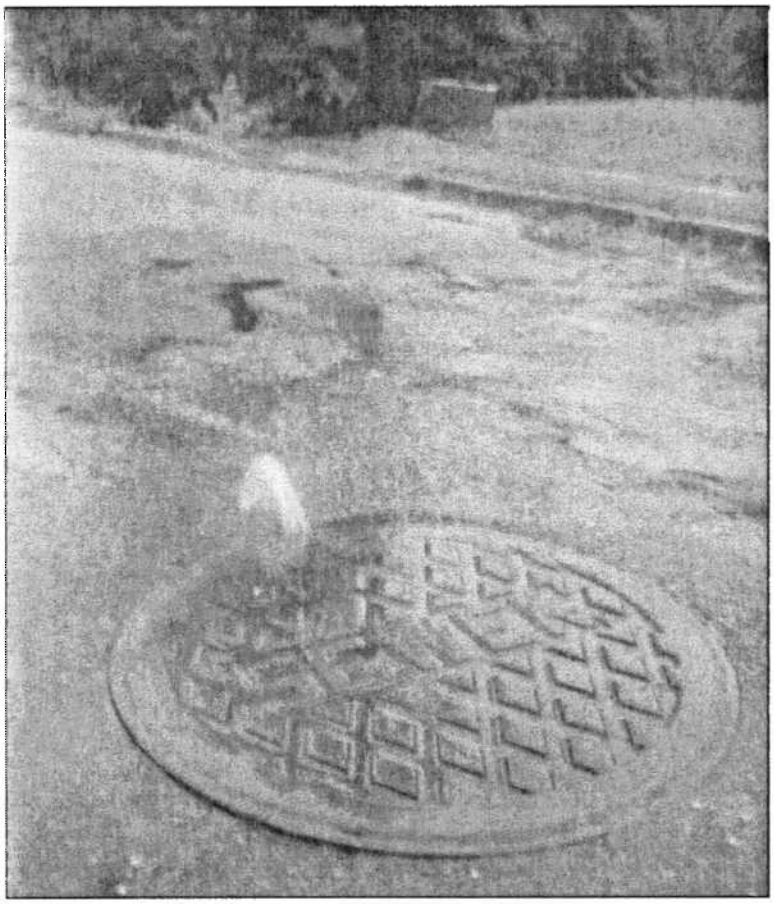


Figure 11. SSO at 105 Park Avenue. Sewage was being discharged into the stormwater canal in the background.

Both the N. 19th Avenue and the Park Avenue locations discharge into the same stormwater canal which in turn discharges into Gordons Creek. The Park Avenue manhole location is approximately 90 yards from the stormwater canal's confluence with Gordons Creek and the N. 19th Avenue SSO location is approximately 170 yards upstream from the Park Avenue location. The EPA inspector returned to these locations at approximately 8:50 p.m. The SSO located on Hardy Street appeared to have ceased but the SSOs at the intersection of N. 19th Avenue and Pearl Street and at Park Avenue were still occurring. The EPA called the WWTP Operator at 8:55 p.m. and reported the SSOs in this area.

I. Post inspection observations:

The EPA discussed observations noted during the unaccompanied site inspection portions of this inspection as a follow-up with the Director, who stated excessive inflow and infiltration (I/I) is causing the SSOs in the area surrounding N. 19th Avenue and Pearl Street. The Director submitted to the EPA a spreadsheet document titled "Proposed Sewer Projects" that included capital improvement projects for the WCTS and two maps that highlighted sewer related projects that are scheduled for completion to address collection system deficiencies. Figure 12 shows planned projects that are to address deficiencies in one area of concern (those areas visited in Area 1 above, west of the South Lagoon). Figure

13 shows the sewer projects listed that would affect Area 2.

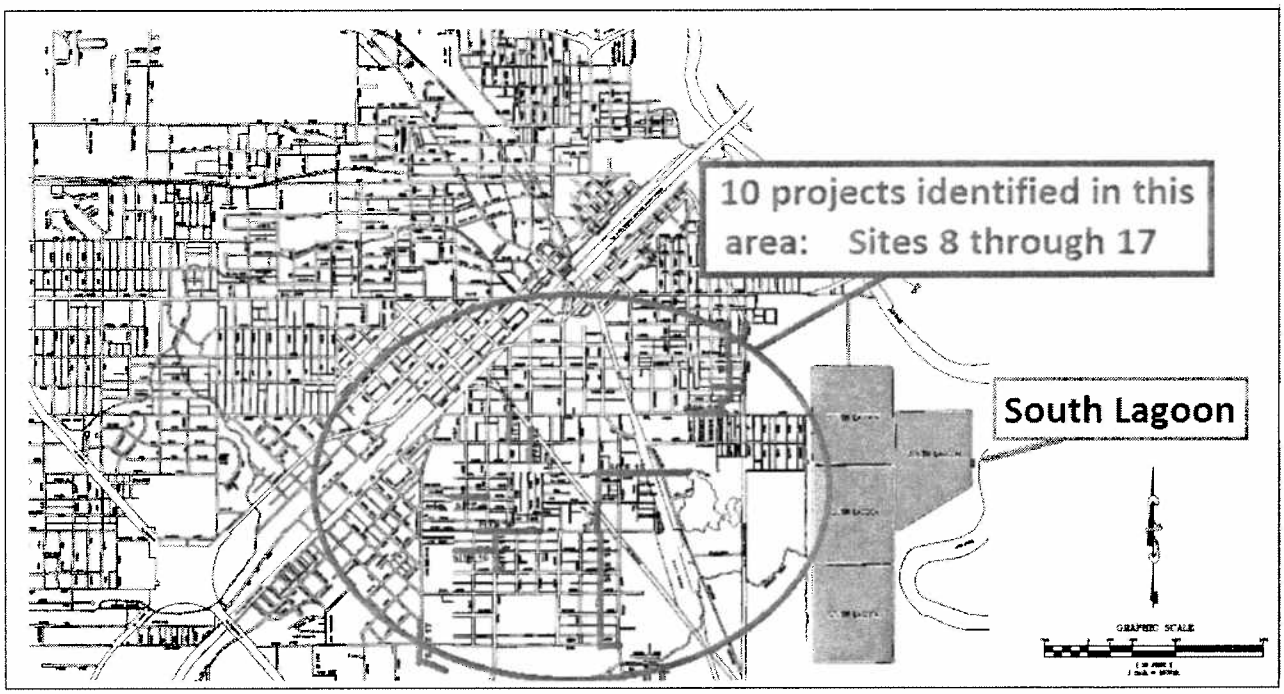


Figure 12. There are 10 construction sites (identified by red lines) identified throughout this area to address WCTS deficiencies (Area 1).

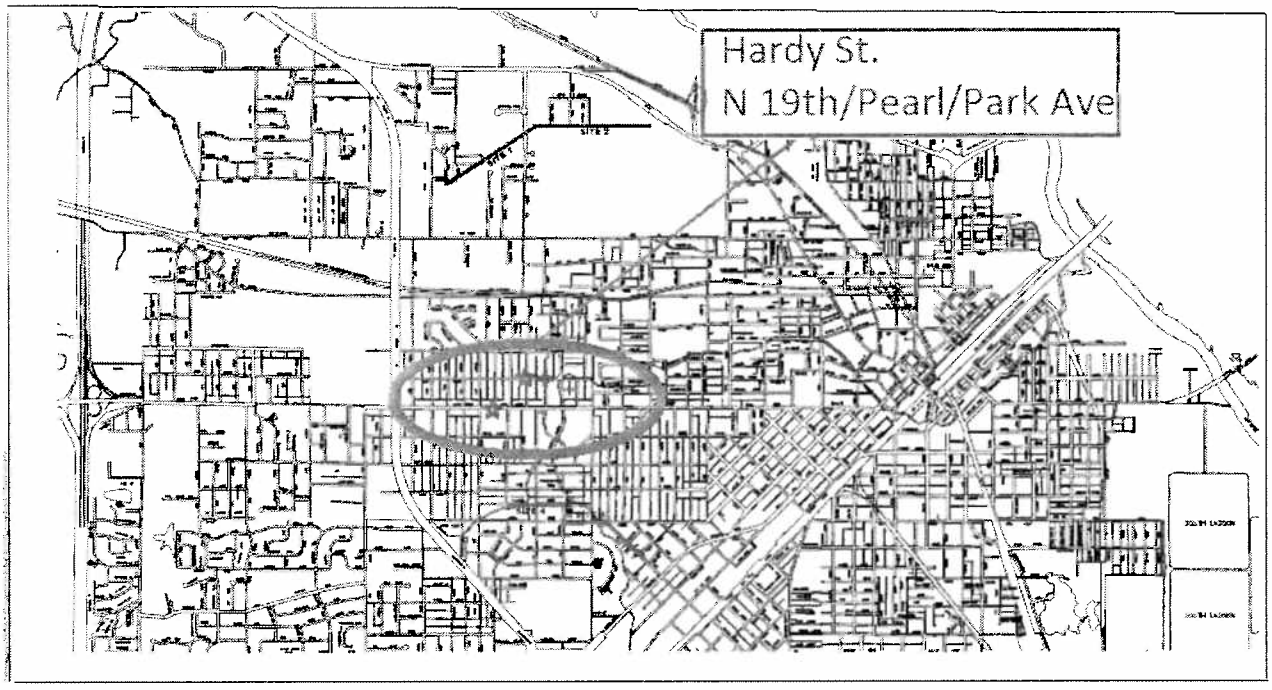


Figure 13. There are seven construction sites (identified by red lines) identified in this drawing that affect three separate areas of the WCTS; Sites 1 through 7. The red stars indicate the areas where SSOs were observed (Area 2).

The list of capital improvement projects listed on the Proposed Sewer Projects spreadsheet appears to be a separate list from those projects identified in maps shown in Figures 12 and 13. Figure 14 shows a picture summary of sewer projects presented in the Proposed Sewer Projects spreadsheet.

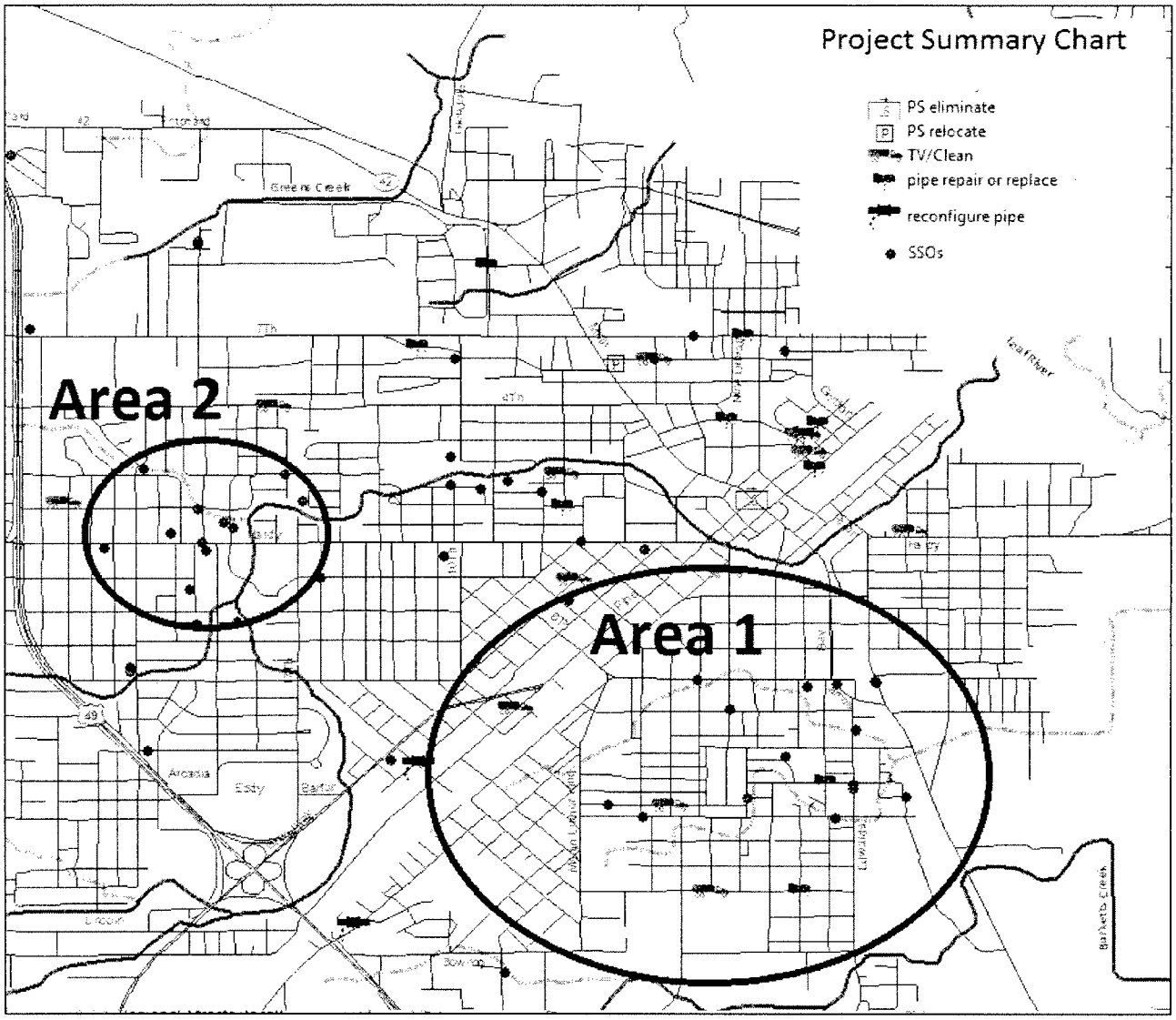


Figure 14. The symbols display approximate locations for sewer projects listed in the Proposed Sewer Projects spreadsheet. Areas 1 and 2 are as described in Section C above. The SSOs displayed are reported SSOs and all symbols represent approximate locations.

II. Findings and concerns:

The City personnel that assisted with the on-site inspection of the WCTS were very helpful, courteous and displayed a good working knowledge of the WCTS.

It is evident from the amount of pump station pumps that have been replaced, the amount of

work being performed at the South Lagoon (not discussed in this report), the elimination of a handful of constructed overflow points within the past few years and a fresh management team (the top management has been with the City for 3 years or less) that the City has taken great strides to improve their POTWs. However, there are areas of concern that the EPA believes are not adequately addressed; specifically, there are observed SSOs in areas of the City that discharge directly, or indirectly through stormwater sewers, into waters of the United States and there are observed SSOs that are occurring in the yards of the citizens of the City. Overflowing sewers in residential areas present an immediate health hazard through contact with sewage and prevents the use of sewer systems for hours due to inadequate capacity during wet weather events, creating adverse health and sanitation issues inside the residential houses.

The City has divided the WCTS into three distinct sections; namely, the North Lagoon Sanitary Sewage Basin (SSB), the Laurel Street SSB and the Burketts Creek SSB. The sections of the City believed to be experiencing SSOs due to excessive I/I are located primarily in the Laurel Street SSB. Judging from information outlined in Figures 13 and 14, the TV/cleaning and capital improvement projects currently scheduled do not appear to address the excessive I/I that is causing SSOs in and around Area 2. Also, though it appears that there is significantly more activity planned for Area 1, due to a lack of project description, it is unclear whether the projects displayed in Figures 12 and 14 adequately address SSOs in Area 1 of the Laurel Street SSB.

D. Management, Operation, and Maintenance Programs

The City does not have a formal CMOM Program as outlined in EPA's *Management, Operation and Maintenance, Comprehensive List of Programs for Sewer and Treatment Systems,* (July 2000). Comments provided for programs listed below are based on the interview with Department personnel.

1. Mapping Program

The City performed a pipe survey between 2003 and 2008, according to EPA's interview with the Director, and placed a GIS mapping program on-line in 2011. There were no formal written mapping programs utilized by the City to ensure standard mapping protocol, map updates and accuracy.

Recommendation:
Formal Mapping Program documentation should be developed to ensure consistency of map protocol and to provide official guidance for map review and maintenance.

2. Grease Control Program

The City has no formal, written Fats, Oils and Grease (FOG) Control Program outside of any guidance in the City's ordinances. No documentation for grease control was provided that gives specific guidance to City personnel to manage grease build-up in the WCTS.

However, the Department has submitted proposed code changes to give it more authority regarding grease trap use in the City.

Recommendation:
The EPA recommends that the City develop documents that outline procedures and provide guidance on how to manage and reduce FOG build-up in the WCTS. A valid grease program includes: providing guidance documents for permitting, inspection, enforcement, compliance tracking, and budgeting; establishing inspection priorities; public education guidance; and establishing performance goals and outlining inter-agency cooperation between the Department and other legal authorities involved in grease trap rules, codes or regulations.

3. Root Control Program

Root control is performed on an "as needed" basis by the City maintenance personnel. No documentation was provided that outlined specific requirements to manage root penetration in the WCTS.

Recommendation:
The EPA recommends the development and implementation of a grease, roots and sewer cleaning program. This program should include: guidance for scheduling hydraulic cleaning, root clearing, and mechanical cleaning activities; personnel responsible for the activity; equipment available; scheduling guidance for preventive maintenance and routine inspections; the use of standard forms, reporting procedures, and tag out/lock out procedures; and procedures for recordkeeping.

4. Capacity Assurance Program

The City does not have any formal, written capacity assurance program that gives specific guidance to Department personnel to address capacity issues when building, adding, or modifying the WCTS. A formal written Capacity Assurance Program maintained by the Department can clarify the requirements and needs of the Department while using the City's codes and ordinances as minimum standard guidance.

Recommendation:
The City should develop a capacity assurance program to include specific criteria for approval of additions to the WCTS, balancing Permit requirements and the City's codes and ordinances; performance measures used to approve or deny an extension of the WCTS; and procedures used to calculate capacity in the WCTS and at the WWTPs.

5. Preventive Maintenance and Inspection Programs

No formal written documents were provided that outlined specific guidance for preventive maintenance and inspection programs. No formal preventive maintenance programs are known to be utilized by the City.

Recommendation:
The EPA recommends that the City develop formal, written CMOM Programs with an aggressive Preventive Maintenance and Inspection Program. Preventive Maintenance and Inspection Programs can have a significant positive impact on the future condition of the WCTS. A properly implemented Preventive Maintenance and Inspection Program can prevent a massive outlay of expenses needed to repair or replace parts of the system that City personnel 'did not see' failing due to the lack of prevention. Relatively small preventive maintenance expenses now can save the City larger repair expenses in the future.

6. Emergency Response

The City did not present formal written documents meant to provide guidance for emergency response to SSOs or pump station failure.

Recommendation:
The EPA recommends that the City develop Emergency Response Plans (including a Pump Station Emergency Response Plan and a Sewer Overflow Response Plan, separately or as a combined document) that provides an outline for emergency response, mitigation and clean up in the event of pump station failure and/or SSOs. The Emergency Response Plans should include, at a minimum: emergency contact information; location(s) of auxiliary power including portable generators; location(s) of portable pumping equipment; guidance for initiating auxiliary power with fixed or portable generators in the event that fixed generators do not start; guidance for installing portable pumps during high flow; mitigation and clean-up procedures; public notification guidelines; and, applicable Contingency Plans.